Appendix

Attorney Docket No.: P-9039-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	FUHR, Gunter	Examiner:	KIM, Taeyoon
Serial No.:	10/591,068	Group Art Unit:	1651
Filed:	August 30, 2006	Confirmation No.:	5979
Title:	MAGNETIC MANIPULATION OF BIOLOGICAL SAMPLES		

DECLARATION UNDER RULE 37 § C.F.R. 1.132

I, Gunther FUHR, Prof. a citizen of Germany, residing at Eintrachtstr. 2, 13187 Berlin, do hereby make the following declaration:

1. I am Director at the Fraunhofer Institute for Biomedical Engineering, Ensheimer Str. 48, 66386 St. Ingbert, Germany. I am Professor in Biophysics. My fields of expertise are Biomedical Engineering and Biotechnology. My research involves Biomedical Engineering and Biotechnology.

2. In addition to speaking German as a mother tongue, I write and speak English fluently and have published about 300 articles in English, and have presented papers and lectures in English on occasion.

3. My Curriculum Vitae and list of publications are attached herewith as Appendix A.

4. I am a named inventor of U.S. Patent Application No. 10/591,068, which is a National Phase Application of PCT International Application No. PCT/EP2005/002004, international filing date February 25, 2005, which in turn claims priority from German Patent Application No. 10 2004 009 985.5, filed March 1, 2004. Both the PCT and German patent applications are in the German language.

5. I have read the above PCT application (in German) as well as the above US application (as filed, in English), the Office actions of November 18, 2009 and August 27, 2010, as well as Pelrine, et al. (U.S. Pat. Pub. No. 2002/0106314).

6. The subject of the present application describes, *inter alia*, the content of pending claim 97, which recites a method for manipulating biological cells, comprising the steps: positioning at least one biological cell on at least one cell carrier, wherein the cell carrier comprises a bottom element, which is arranged such that it can be placed and shifted on a solid surface in a mechanically stable manner, wherein the cell carrier has a lateral dimension within the range from 10 μm to 1 cm and a height within the range from 0.5 μm to 2000 μm, and moving the cell carrier with the at least one biological cell on the base surface by exerting a magnetic force.

7. I understand the Examiner has asserted that Pelrine et al. disclose a **levitating**-particle device in which magnetic microparticles and/or effectors are **levitated** adjacent a diamagnetic surface.

8. As described below, the subject of claim 97 is substantially different than the invention described in Pelrine et al.

9. Moreover, based upon my review of the English and German language applications, I believe the Examiner's citation of the Pelrine reference is based on certain semantic inaccuracies in some of the critical terms used in the English-language application.

10. The term ".. mechanisch stabil auf einer festen Oberfläche aufsetzbar und verschiebbar ist" in the German-language application was translated as "can be placed and displaced on a solid base surface in a mechanically stable manner." This is inaccurate and misleading. The phrase means and should have been translated as "can be placed and shifted on a solid surface in a mechanically stable manner." In any event, the meaning of this sentence would not be construed by a German-speaker to mean that the carrier placed on the surface would be "detached" from the solid base surface.

11. In context, the portion of the specification should read:

> . . . wherein a bottom element is provided by which the cell carrier can be placed and shifted on a solid surface in a mechanically stable manner. By providing the bottom element, which forms a support on an underside of the cell carrier, positional stability is advantageously achieved both in the rest state and in the state in which it is moved by the magnetic force.

12. The above cited paragraph of the description indicates that the bottom element is actually lying on the solid surface, since it is emphasized that by providing the bottom element, positional stability of the cell carrier is achieved both in the rest state and in the moving state. This stability means that the cell carrier can be arranged without tilting on the solid surface, and that no changes in the orientation of the cell carrier relative to the base surface are substantially possible.

13. The term "stability" refers to both the rest state and the moving state. Moreover, it will be evident to a person of skill in the art, based on the provision of a bottom element of the cell carrier and the corresponding explanations, that a tilting-free arrangement would be rather meaningless if referring to an embodiment wherein the cell carrier is placed only transiently on the solid surface and subsequently displaced therefrom by levitation. Also, it is explicitly stated that the cell carrier according to invention can be displaced <u>on</u> (and not from) the base surface. Thus, it should be evident that an oriented movement takes place on the surface and not above it.

14. The above is contrary to the teaching of the Pelrine reference, and a cell carrier according to the present invention having the bottom element as claimed, has improved mechanical stability with reference to the Pelrine reference.

The undersigned declares that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 10/Dec./2010

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Curriculum vitae:

1970-75	Studies in electrical engineering and semiconductor technologies, Technical University, Dresden.
1975	Diploma Thesis (Dipl.-Ing.): »Thermo Videosystem for Tumor Monitoring«.
1975-78	Executive Manager of the Electronic Camera Production Group at VEB Kombinat Pentacon, Dresden.
1976-78	Evening Classes at the Academy of Painting and Graphics. Master Degree at the College of Art, Dresden.
1978-81	Studies in Biophysics at the Humboldt-Universität, Berlin.
1981	Doctor Thesis (Dr.rer.nat.) in the field of Plant Physiology: »Spectroscopic Studies on the Photomorphogenesis of Higher Plants« at the Humboldt-Universtity, Berlin.
1985	Habilitation (Dr.habil.) in the field of Cell Biology and Biophysics: »About the Rotation of Dielectric Bodies in Rotating Fields« at the Humboldt-University, Berlin.
1989	Lecturer in the field of Biophysics at the Humboldt-Universität, Berlin.
1992	Call for Full Professor and Chairman of the Biology Department by the Wirtschaftsuniversitität, Wien (refused).
1992-94	Member of the Board of Review for Professorship & Structure with regard to the Institute of Biology and the Museum of Natural Science of the Humboldt-Universität, Berlin, in duty of the Minister of Science & Technology of the Land Berlin.
1993	Full Professor at the Institute of Biology of the Humboldt-Universität, Berlin.
1994-96	Vice Dean of the Faculty of Mathematics and Natural Sciences I at the Humboldt-Universität, Berlin.
1994-05	Executive Manager of nine polar expeditions.
2000	Founding Director of the Center of Biophysics and Bioinformatics at the Humboldt-Universität, Berlin.
2001	Full Professor and Chairman of the Biotechnology and Medical Technology Department at the Medical Faculty of the Universität des Saarlandes.
2001	Executive Director of the Fraunhofer-Institut für Biomedizinische Technik (IBMT) in St. Ingbert, with branches in Sulzbach (Saar), Potsdam-Golm and Shenzhen (China).
2003	Founding Director of the Research Cryobank with the Center for Cryobiotechnology »EUROCRYOSaar« in Sulzbach/Saar (Germany).
2005	Chief Coordinator of the Integrated EU-Project »CellPROM« with 27 partners within Europe.
2008	Since 2008 Director of the Fraunhofer Research Unit for Marine Biotechnology in Lübeck (parallel to the Fraunhofer IBMT)

Honors, awards and activities in the scientific community:

1983	Humboldt-Award
1991	Innovation Award, State of Berlin
2002	Philip Morris-Award
2003	Nominated for the »Future Award« of the President of the Federal Republic of Germany (one of the three final candidates)
2004:	Appointed as Saarland Embassador.

List of publications – Günter R. Fuhr

1983

1. Glaser, R., Fuhr, G., Gimsa, J., Rotation of erythrocytes, plant cells and protoplasts in an outside rotating electric field, Stud. biophys. 96, 11-20, 1983

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3b. Hagedorn, R., Ein Beitrag zur Fokussierung von Proteinen mittels Pufferlösungen, HUB, Diss. 1984

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3c. Hagedorn, R., Neef, E.: The Efficiency of Photosynthetic Energy Conversion in Continuous and Intermittend Light, J. theor. Biol. 114, 93-101, 1985

4. Fuhr G., Zum Einfluß elektrischer Felder auf zelluläre Systeme: Interpretation am Beispiel der Electrorotation, Colloquia Pflanzenphysiol. HUB 8, 39-55, 1985

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14. Fuhr, G., Hagedorn, R., Erzeugung diskontinuierlich rotierender Felder zur Untersuchung biologischer Objekte, HUB, 59-61, 1985

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